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October 28, 2008

Ari Q. Fitzgerald
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VIA ELECTRONIC DELIVERY

Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, SW
Room TWA325
Washington, DC 20554

Re: Notice of *Ex Parte* Presentation
ET Docket Nos. 04-186, 02-380

Dear Ms. Dortch:

On October 28, 2008, the undersigned, on behalf of GE Healthcare, exchanged separate e-mail correspondence with the following Commission staff:

Charles Mathias, legal advisor to Chairman Martin
Bruce Gottlieb, legal advisor to Commissioner Copps
Renée Crittendon, legal advisor to Commissioner Adelstein
Wayne Leighton, legal advisor to Commissioner Deborah Taylor Tate
Angela Giancarlo, legal advisor to Commissioner Robert McDowell
Julius Knapp, Alan Stillwell, and Bruce Romano, Office of Engineering and Technology

In the correspondence, GE Healthcare reiterated several arguments made in its prior filings in the above-referenced proceeding. In particular, GE Healthcare noted that in order to protect licensed wireless medical telemetry service ("WMTS") operations in TV Channel 37, the FCC should adopt the emissions mask proposed by GE Healthcare in a May 6, 2008 *ex parte* letter[1] and supported by the White Spaces Coalition in a May 7, 2008 *ex parte* letter[2] for TV Channels 36, 37, and 38. In addition, GE Healthcare urged the FCC to: (1) delay any new TV white space operations on TV Channels 33-35 for at least 1 year (until February 2010) to allow users of Part 15 medical telemetry devices (including hospitals) to become aware of the new operations and to plan and execute a transition to WMTS; (2) require fixed TV white space devices to be registered in a public database; and (3) given the life-critical nature of grandfathered Part 15 medical telemetry operations, require new fixed, unlicensed TV white

[1] *Ex Parte* filing by GE Healthcare, ET Docket Nos. 04-186, 02-380 (filed May 6, 2008).
[2] *Ex Parte* filing by the White Spaces Coalition, ET Docket No. 04-186 (filed May 7, 2008).

space device users to notify nearby hospitals prior to commencing operations on TV Channels 7-46. GE Healthcare also distributed copies of its prior filings in this proceeding, which are attached to this notice.

Pursuant to Section 1.1206 of the Commission's rules, this letter is being filed via ECFS with your office.

Respectfully submitted,

/s/ Ari Q. Fitzgerald

Ari Q. Fitzgerald
Counsel to GE Healthcare

cc: Charles Mathias
Bruce Gottlieb
Renée Crittendon
Wayne Leighton
Angela Giancarlo
Julius Knapp
Alan Stillwell
Bruce Romano

Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of	)	
	)	
Unlicensed Operation in the TV Broadcast Bands	)	ET Docket No. 04-186
	)	
	)	
Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band	)	ET Docket No. 02-380
	)	

To: The Commission

COMMENTS OF GE HEALTHCARE

GE Healthcare ("GEHC") is a unit of General Electric Company that provides a broad range of products and services that enable healthcare providers to better diagnose and treat diseases and conditions, including products and services that incorporate a wide variety of wireless technologies. In particular, GEHC serves as a leading source of wireless medical telemetry systems. 1/ Based on its extensive experience with the wireless medical telemetry marketplace, GECH submits these comments to alert the Commission to the potential for harmful interference to many existing wireless medical telemetry devices, if the proposal contained in the Further Notice of Proposed Rulemaking ("*Further Notice*") in this proceeding 2/ for the widespread use of unlicensed devices in the TV bands is adopted without establishing appropriate protections for medical telemetry users.

1/ For more information on GEHC's wireless telemetry products, see www.gehealthcare.com/usen/patient_mon_sys/wireless_and_telemetry/products/telemetry_sys/index.html. GEHC was the first provider to utilize advanced frequency hopping spread spectrum technology and the first provider of WMTS systems to utilize advanced computing infrastructure.

2/ *Unlicensed Operation in the TV Broadcast Bands*, First Report and Order and Further Notice of Proposed Rulemaking, FCC 06-156, ET Docket No. 04-186 (rel. Oct. 18, 2006) ("*Further Notice*").

BACKGROUND

To fully appreciate GEHC's concerns, it is important to first understand the regulatory history of wireless medical telemetry. Prior to 2000, wireless medical telemetry devices operated on an unlicensed basis on vacant TV Channels 7-46 (174-216 MHz and 470-668 MHz), or on a licensed but secondary basis to Part 90 land mobile users in the 450-470 MHz band. In 2000, recognizing the expected increase in the use of the TV bands due to the digital television ("DTV") transition, the Commission adopted an order establishing the Wireless Medical Telemetry Service ("WMTS"), to which it allocated 14 MHz of spectrum on a primary basis, including 608-614 MHz (Channel 37) in the TV bands. 3/ The Commission explained that the WMTS allocation was necessary "to protect the public safety by providing spectrum where medical telemetry equipment can operate without interference." 4/ The Commission also noted that the migration of medical telemetry users to the WMTS spectrum would allow it to lift the freeze that had been placed on the filing of applications for high power land mobile operations at 450-470 MHz. The freeze represented one example of where the Commission "had to take steps to protect medical telemetry from interference because it is used to protect safety of life." 5/

Despite the new primary status for WMTS, the Commission recognized that the WMTS bands faced significant constraints (*e.g.*, radio astronomy quiet zones, interference from adjacent TV channels, grandfathered government radar systems, etc.), such that in many markets no more than 6 MHz of spectrum would actually be available for WMTS use. 6/ The Commission also

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3/ *Amendment of Parts 2 and 95 of the Commission's Rules to Create a Wireless Medical Telemetry Service*, Report and Order, 15 FCC Rcd 11206 (2000) ("*WMTS Order*"). The *Further Notice* proposes to prohibit the operation of unlicensed devices within the 608-614 MHz WMTS band. *Further Notice* at ¶ 2.

4/ *WMTS Order* at ¶ 11.

5/ *Id.* at ¶¶ 11, 57.

6/ *Id.* at ¶ 11.

recognized that medical telemetry users would need time to transition to the new bands in a manner that would permit users "to operate their existing systems as long as possible," so as not to impose unnecessary financial burdens on hospitals. 7/ Accordingly, the Commission continued to grant equipment authorizations for Part 15 and Part 90 medical telemetry devices for an additional two years, and it also allowed equipment manufactured pursuant to those authorizations to be sold and operated indefinitely. 8/ Moreover, the *WMTS Order* determined to maintain the freeze on high power land mobile operations in the 460-470 MHz band for another three years. The Commission subsequently extended the freeze three additional times, ultimately until December 31, 2005, in order to ensure adequate time for the transition. 9/

I. A ONE-YEAR DELAY IN THE AVAILABILITY OF CHANNELS 33-36 FOR UNLICENSED DEVICE USE IS NEEDED TO PROTECT LEGACY MEDICAL TELEMETRY DEVICES

Although the Commission ceased granting equipment authorizations for new Part 15 medical telemetry devices as of October 16, 2002, the manufacture, sale and use of products certified prior to that deadline continues today. GEHC is aware of many hospitals that continue to operate grandfathered Part 15 medical telemetry devices in vacant TV channels 7-13 (174-216 MHz) and 33-36 (584-608 MHz). Notwithstanding the DTV transition, spectrum utilization by broadcast television has been relatively predictable and gradual, given that only a limited number of television broadcasters operate in any one location, Part 74 technical requirements invariably

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7/ *Id.* at ¶ 59.

8/ 47 C.F.R. §§ 15.37(i); 15.241; 15.242.

9/ *See Wireless Telecommunications Bureau Extends Freeze on High Power Use of 460-470 MHz Band Offset Channels and Seeks Comment on American Hospital Association's Proposal for Migration of Medical Telemetry Equipment to Wireless Medical Telemetry Service*, Public Notice, DA 03-3178, 18 FCC Rcd 21014 (rel. Oct. 15, 2003); *Wireless Telecommunications Bureau Extends the Freeze on High Power Use of the 460-470 MHz Band Offset Channels*, Public Notice, DA 04-987, 19 FCC Rcd 6374 (rel. Apr. 9, 2004); *Wireless Telecommunications Bureau Extends the Freeze on High Power Use of the 460-470 MHz Band Offset Channels Until December 31, 2005*, Public Notice, DA 04-2071, 19 FCC Rcd 12414 (rel. Jul. 8, 2004).

result in vacant TV channels, and the process for licensing and deploying a new TV transmitter is relatively lengthy and involves substantial public notification requirements. For these reasons, the unlicensed use of TV channels has proven to be an effective, safe and valuable option for hospitals and healthcare providers in addition to the WMTS band.

A 2005 report by Frost & Sullivan on the U.S. telemetry market for 2005-2011 predicts an overall growth rate in the U.S. for medical telemetry of 11.5%. 10/ Hospitals and healthcare facilities are experiencing higher patient acuities, as well as an aging patient population with multiple health problems. In response to this trend, they have moved from using telemetry monitoring mostly in step-down units to leveraging telemetry as a "flexible bed" solution. Under such circumstances, virtually any bed can become a monitored bed, with wireless medical telemetry providing a lower cost and more mobile alternative. As reimbursements for inpatient hospital stays continue to decline, telemetry monitoring is being added to more lucrative ambulatory areas such as cardiac rehabilitation and outpatient clinics. 11/ In addition to the increased usage of wireless telemetry, the lifting of the freeze on high powered applications in the 460-470 MHz band has resulted in a large number of existing telemetry channels being relocated into the WMTS band.

Given these pressures, some organizations are using channelized telemetry systems that, because of expansion over time that eventually exhausted system capacity in the WMTS bands, also have devices operating in one or more of TV channels 33 through 36. Unfortunately, other currently available solutions that achieve higher capacity exclusively within the WMTS bands are not compatible with the existing systems. Given the substantial investments these hospitals have

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10/ Frost and Sullivan, *U.S. Medical Wireless Ambulatory Telemetry Monitoring Equipment Markets*, Report No. F260-56 (2005) at 1-3.

11/ *See id*. at 1-9, 2-1.

made in channelized telemetry, they have chosen to expand using the Part 15 alternatives available to them.

Healthcare providers are largely unaware of the proposals contained in the *Further Notice* to permit widespread unlicensed use of TV spectrum beginning February 18, 2009. As the transition experience from the 460-470 MHz band illustrated, it is unlikely that healthcare providers will become aware of the proposed new unlicensed uses and be able to complete a transition away from their current Part 15 solutions within two years. In the 460-470 MHz context, the Commission found it necessary to extend the transition period to over five years after the adoption of the *WMTS Order*. Therefore, GEHC proposes that any new unlicensed use of channels 33 through 36 be delayed one year, until February 18, 2010. 12/ This will provide much-needed additional time for healthcare providers to be become aware of the new unlicensed usage and to plan replacement systems. In addition, it will provide additional time for medical telemetry manufactures to complete the design and introduction of new products into the marketplace that will provide for the migration of all channels to WMTS frequencies, while protecting a significant portion of healthcare providers' existing investments in legacy equipment. This short extension is consistent with the Commission's policy goals, expressed in the WMTS proceeding, to protect the "safety of life" telemetry applications from interference and to minimize the financial burdens on healthcare providers that will need to purchase new equipment to avoid interference from new uses in the band.

Finally, GEHC is not confident that the still-undefined sensing technology to be incorporated into the TV band devices will be able to provide adequate protection to telemetry

12/ Legacy telemetry systems currently operating on channels 7-13 represent older technology than those operating on channels 33-36. Turning off these older systems by 2009 would not have the same operational or investment impact on hospitals, compared to discontinuing the more advanced operations on channels 33-36, which in many cases have only recently come into use as capacity limits within the WMTS bands were reached.

users. As the *Further Notice* recognized, there are a number of scenarios in which such technology will fail to detect an occupied channel. 13/ These limitations of spectrum sensing would be particularly problematic for preventing interference to relatively low power medical telemetry devices because such devices could receive harmful interference from more powerful TV band devices located at significant distances, where low power telemetry devices would not be detectable to the TV band device. GEHC submits that this situation poses unacceptable risks for safety of life telemetry applications.

II. THE COMMISSION SHOULD REQUIRE FIXED UNLICENSED USERS TO NOTIFY NEARBY HOSPITALS IN ADVANCE OF COMMENCING OPERATIONS ON CHANNELS 7-46

The numbers and identities of healthcare providers operating grandfathered Part 15 medical telemetry systems on Channels 7-46 (the 174-216 MHz and 470-668 MHz bands) are unknown. Because of the life-critical nature of these operations, GEHC proposes that unlicensed "fixed/access" devices in the TV bands be required to notify nearby hospitals before they begin operations. 14/ Such a notification requirement would be similar to the existing requirement that digital TV stations notify nearby hospitals before commencing operations, in order to avoid possible interference to wireless medical telemetry devices. 15/

13/ *See Further Notice* at ¶ 39.

14/ Although GEHC expects that the majority of wireless telemetry use will be confined to channels 33-37 by 2009, the notification procedure should apply to all relevant channels (*i.e.*, 7-46) in order to prevent any possible interference to those legacy systems which may continue to operate outside of channels 33-37. Alternatively, the notification procedure could be limited to those channels for which wireless medical telemetry equipment certifications have been granted in the past.

15/ *See WMTS Order* at ¶ 57 (referencing the "requirement for DTV stations to notify nearby health care facilities"); *see also* Joint Statement of the Federal Communications Commission and the Food and Drug Administration Regarding Avoidance of Interference Between Digital Television and Medical Telemetry Devices (March 25, 1998) ("the FCC will ensure that TV broadcasters communicate with area hospital and other health care facilities to avoid interference

III. STRICTER LIMITS ARE NEEDED FOR SPURIOUS EMISSIONS FALLING WITHIN THE WMTS BAND AT 608-614 MHZ (CHANNEL 37)

The *Further Notice* sought comment on the appropriate limits for emissions outside a TV band device's operating channel. 16/ If new unlicensed devices are allowed to operate in the TV bands, spurious emissions from these devices that fall into the 608-614 MHz WMTS band would be limited, by Sections 15.205 and 15.209 of the Commission's rules, to 200 microvolts per meter, as measured at 3 meters, based on a 120 kHz CISPR quasi-peak detector. 17/ Because many WMTS systems utilize highly sensitive narrowband receivers and very low-power (*e.g.*, less than 0 dBm EIRP) transmitters, this limit would be insufficient to adequately protect WMTS receivers from unlicensed devices that are brought inside healthcare facilities. Because WMTS receive antennas are often ceiling mounted, unlicensed devices carried by a person into the facility could come within a few feet of the antennas when passing underneath. 18/

Although the lack of more stringent Part 15 spurious emissions limits has not previously posed many problems for low power WMTS systems, the likelihood has been limited because no other Part 15 devices have been permitted to have fundamental emissions near in frequency to the WMTS band. The only other devices currently permitted to have fundamental emissions close to WMTS frequencies are Part 73 and Part 74 transmitters that are relatively few in number and are not typically in close physical proximity to a WMTS installation.

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to medical telemetry devices"). The requirement to notify nearby hospitals is often contained as a condition on the DTV licensee's authorization.

16/ *Further Notice* at ¶ 60.

17/ 47 C.F.R. § 15.205; 15.209. Section 15.205 applies because the 608-614 MHz band is a restricted band. In the *Further Notice*, the Commission tentatively rejected proposals that sought less stringent limits than those contained in section 15.209. *Further Notice* at ¶ 60.

18/ Other than posting signs, most hospitals have no effective means to police policies that prohibit the use of wireless devices inside the building.

By contrast, if ubiquitous unlicensed devices are allowed to produce fundamental emissions near in frequency to the WMTS band, there will be much greater risk of harmful interference from spurious emissions that nevertheless satisfy the limits contained in Sections 15.205 and 15.209. While WMTS users would be legally entitled to protection from any such interference, in practice it could be difficult to identify the source of the interference, and life-critical monitoring could be impacted. Moreover, the proposed mandatory transmission of a unique identifier for unlicensed devices, 19/ while valuable for identifying interference from fundamental emissions, may be of little use for identifying the source of interference caused by spurious emissions.

Because of the potential for harmful interference, GEHC proposes that spurious emissions in the 608-614 MHz band from unlicensed TV band devices be further limited to 50 microvolts per meter within any 10 kHz bandwidth, as measured at a one meter distance. Moreover, the Commission should establish specific measurement and testing procedures consistent with this limit, which would be used for equipment authorization purposes.

IV. RESTRICTIONS ON UNLICENSED USE OF CHANNELS 36 AND 38 ARE NEEDED TO PROTECT THE WMTS BAND FROM ADJACENT BAND SIGNALS

In the Further Notice, the Commission recognized the "potential for TV band devices to interfere with TV and other authorized services operating on adjacent channels," and sought comment on appropriate protection requirements. 20/ Because many existing WMTS systems incorporate very sensitive receivers, they can be vulnerable to overload by strong adjacent band signals. Although television broadcasters use high power transmitters in channels 36 and 38, the physical separation and transmit antenna pattern of the unlicensed wireless medical telemetry

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19/ *See Unlicensed Operation in the TV Broadcast Bands*, Notice of Proposed Rulemaking, FCC 04-113, 19 FCC Rcd 10018, 10028 (2004) ("*White Spaces NPRM*") at ¶ 22.

20/ *Further Notice* at ¶ 42 (emphasis added).

receivers are usually such that the receiver's intrinsic filtering provides adequate protection. However, if unlicensed devices were to operate on either channel 36 or 38 within only a few meters of a WMTS receive antenna at 26 dBm EIRP, as proposed for personal/portable devices, 21/ significant receiver desensitization could be expected. 22/

To mitigate overload from television signals in the small fraction of cases where a WMTS systems are located very close to channel 36 or 38 broadcast transmitters, more sophisticated filtering can be added. This has been done only where required because it results in significantly increased cost and/or sacrifice of usable WMTS spectrum. Adding such filtering to prevent potential overload from ubiquitous unlicensed devices operating on channels 36 and 38 would not be a practical option, however, as it would require significant re-design work on hundreds of existing WMTS systems, resulting in substantial cost and performance implications. GEHC therefore proposes that the use of television channels 36 and 38 by unlicensed devices not be permitted. In the alternative, GEHC proposes that the use of channels 36 and 38 be limited to professionally-installed "fixed/access" devices, with the additional requirement of coordination by the WMTS coordinator 23/ to ensure a maximum field strength of 50 millivolts per meter, as measured at the perimeter of a registered WMTS facility.

By seeking to prohibit the use of personal/portable unlicensed devices on channels 36 and 38 in order to fully protect WMTS systems, GEHC's proposal is similar to the tentative conclusion in the *Further Notice* to prohibit personal/portable devices on channels 14-20 in order

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21/ *See White Spaces NPRM* at ¶ 22.

22/ GEHC recognizes that the *Further Notice* sought comment on whether unlicensed TV band devices should employ spectrum sensing technology for adjacent channels. *Further Notice* at ¶ 42. As stated earlier, however, GEHC is unconvinced that this as-yet-to-be-defined technology can provide adequate protection to wireless medical telemetry. *See supra* at 5-6.

23/ The American Society for Healthcare Engineering of the American Hospital Association ("ASHE/AHA") serves as the WMTS coordinator. *See Further Notice* at n. 63; *see also* 47 C.F.R. §§ 95.1111; 95.1113.

to protect public safety and other PLMRS/CMRS operations in that portion of the spectrum. 24/ Likewise, the *Further Notice* sought comment on whether to prohibit unlicensed operations on channels 2-4, in order "to avoid possible interference to TV interface devices such as VCRs, DVDs, satellite and cable boxes that operate on or adjacent to those channels." 25/ If the Commission would consider eliminating the use of three channels to protect consumer electronic devices, GEHC believes the Commission should not hesitate to consider restrictions on two additional channels for the purpose of protecting critical, safety of life WMTS applications.

CONCLUSION

As the Commission has previously recognized in the WMTS proceeding, it is in the public interest to protect wireless medical telemetry devices – even those operating on an unlicensed or secondary basis – from harmful interference, due to the safety of life and public safety applications served by these devices. The Commission should be mindful of its WMTS precedent in this proceeding and enact the protections for wireless medical telemetry systems as described above.

Respectfully Submitted,

/s/ Ari Q. Fitzgerald

Ari Q. Fitzgerald
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Counsel to GE HEALTHCARE

January 31, 2007

24/ *See Further Notice* at ¶ 21.

25/ *Id.* at ¶ 57.

GE Healthcare

8200 West Tower Avenue
Milwaukee, Wisconsin 53223
USA

May 6, 2008

BY ELECTRONIC FILING

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, D.C. 20554

Re: GE Healthcare *Ex Parte*
ET Docket Nos. 04-186 and 02-380

Dear Ms. Dortch:

In previous filings, GE Healthcare ("GEHC") has raised a number of concerns about the potential for harmful interference to safety-of-life medical telemetry operations under the current proposal to allow unlicensed operations in the TV white spaces.[1] Both grandfathered Part 15 unlicensed devices currently operating in the white spaces and Part 95 Wireless Medical Telemetry Service ("WMTS") operations in channel 37 could be affected.

The manufacturing, sale and use of Part 15 medical telemetry devices with equipment authorizations granted prior to October 16, 2002 has been indefinitely grandfathered by the Commission.[2] Because hospitals continue to use this equipment, GEHC has proposed a one-year delay, until Feb 2010, for new white space operations in channels 33-36, to allow users sufficient time to become aware of the new operations, and to plan and execute a transition to WMTS. In addition, the requested delay would be consistent with Congress's desire to minimize the barriers to the orderly transition to digital television by consumers in February 2009.

In order to protect WMTS operations in channel 37, GEHC has recommended that no new white space devices be permitted to operate in channels 36 or 38 or, that in the

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[1] *See, e.g.*, Comments of GE Healthcare, ET Docket Nos. 04-186 and 02-380 (Jan. 31, 2007) ("GEHC Jan. 2007 Comments"); *Ex Parte* filing of GE Healthcare, ET Docket Nos. 04-186 and 02-380 (Aug. 27, 2007); *Ex Parte* Letter of GE Healthcare, ET Docket Nos. 04-186 and 02-380 (Jan. 9, 2008) ("GEHC Jan. 2008 *Ex Parte*").

[2] *Amendment of Parts 2 and 95 of the Commission's Rules to Create a Wireless Medical Telemetry Service*, Report and Order, 15 FCC Rcd 11206 (2000) at ¶ 59.

alternative, the use of these channels be limited to professionally installed "fixed/access" devices.[3] Such a restriction would serve to protect medical telemetry from harmful interference caused by adjacent channel overloading,[4] and would also serve to reduce the likelihood of co-channel interference due to white space device out-of-band spurious emissions falling into channel 37.[5]

However, in the event that the Commission ultimately decides to allow new portable white space devices to operate on an unlicensed basis, it will be necessary to limit device emissions, both fundamental and spurious, in channels 36 and 38 to reduce the likelihood of overloading sensitive medical telemetry receivers. Toward that end, GEHC hereby proposes a portable device emissions mask for channels 36-38 that addresses adjacent channel overload as well as channel 37 spurious emission interference. A graphic illustration of the mask is attached as Exhibit A.

Band		Max field Strength
f_1 [MHz]	f_2 [MHz]	[dBμV/m/120kHz @ 1m]
602	607	120 – 5(f – 602MHz)
607	608	95
608	614	30
614	615	95
615	620	120 – 5(620MHz – f)

It is important to note that in determining these emissions limits GEHC has assumed that a large number of devices would not be transmitting simultaneously in channels 36 and 38. Therefore, should the Commission elect to adopt such a mask and to permit unlicensed portable device operations in channels 36 and 38, GEHC further proposes that the rules require devices to select with equal likelihood from all available channels. This would avoid the unintended consequence of encouraging lower power devices to congregate in channels 36 and 38, as GEHC anticipates that the majority of portable devices would ultimately be designed with a maximum transmit power lower than the currently proposed 100 mW limit.[6]

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[3] GEHC Jan. 2007 Comments at 9; *see also* GEHC Jan. 2008 Ex Parte at 1.

[4] Medical telemetry receivers are designed to receive very low power telemetry signals and may be highly sensitive to strong signals in adjacent TV channels. Although receivers may be "hardened" on a case-by-case basis when strong broadcast TV signals are known to be present in channels 36 and 38, this typically increases system cost and/or reduces system capacity. Proposed portable white space devices, when carried into hospitals, would present unexpected strong signals to systems that have not been specifically hardened to withstand them.

[5] GEHC, NAB, MSTV, IEEE 802 and Motorola have all stated in comments filed in this proceeding that the currently proposed 200 uV/m @ 3m spurious emissions limit is inadequate to protect incumbent operations if such emissions are allowed to fall co-channel to incumbent operations.

[6] For example, Class 3 and Class 2 802.15.1 Bluetooth devices (the most common classes) achieve typical ranges of 1 meter and 10 meters while operating at 2.4 GHz with transmit powers of only 1 mW and 2.5 mW, respectively. Considering the significantly better propagation characteristics at 600 MHz relative to 2.4 GHz, and practical design constraints including battery life, electronic circuit complexity, size and cost,

Respectfully submitted,

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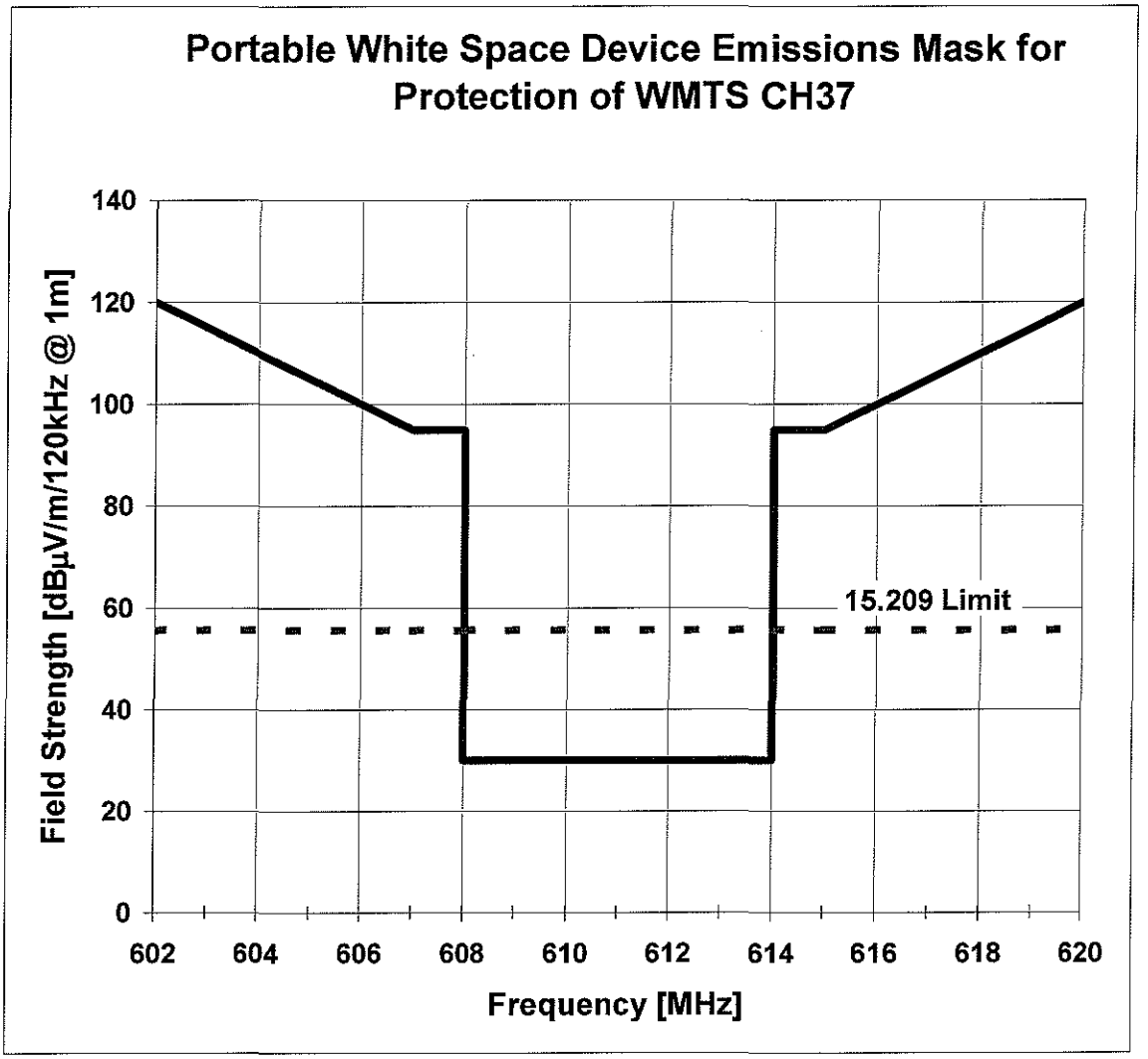
it seems likely that most personal/portable devices will be designed to operate at significantly less than 100 mW maximum.

EXHIBIT A


Portable White Space Device Emissions Mask for Protection of WMTS CH37
Field Strength [dBµV/m/120kHz @ 1m]
140
120
100
80
60
40
20
0
15.209 Limit
602
604
606
608
610
612
614
616
618
620
Frequency [MHz]

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ATTORNEYS AT LAW

May 7, 2008

Ex Parte

Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Unlicensed Operation in the TV Broadcast Bands, ET Docket No. 04-186

Dear Ms. Dortch:

On May 6, 2008, on behalf of the White Spaces Coalition,[1] Paul Margie spoke via telephone with Daniel Gonzalez, Chairman Martin's Chief of Staff, and Aaron Goldberger, Legal Advisor to the Chairman, and Paul Margie and Ed Thomas spoke via telephone with Julius Knapp, Chief of the Office of Engineering and Technology, regarding the above-referenced proceeding. The parties discussed the Coalition's support for GE Healthcare's proposal for protecting medical telemetry devices through an emissions mask in Channels 36 – 38. The parties also discussed the operating parameters the White Spaces Coalition has proposed for personal/portable white space devices and technical methods to avoid causing harmful interference to incumbent operations, including wireless microphones.

Pursuant to the Commission's rules, a copy of this notice is being filed electronically in the above-referenced docket. If you require any additional information please contact the undersigned.

Sincerely yours,

/s/ R. Paul Margie

R. Paul Margie

cc: Daniel Gonzalez
Aaron Goldberger
Julius Knapp

[1] The White Spaces Coalition's members include Dell, Inc., Google, Inc., Hewlett-Packard Co., Microsoft Corp., Palm, Inc., Philips Electronics North America Corp., and TDK Corp.